sk8art

Grade Level:
high school

Subject Matter:
algebra

Curricular Uses:
This lesson plan explores perimeter/area.

Materials/Resources Required:

- copy of "Skate Borders" activity sheet for each student (see website under "Credit") or you can make your own grid of 1-inch squares
- 12 flat toothpicks of twist ties (cut to 1" lengths) for each student

Lesson 12 – Skate Borders

Overview:

This activity allows students to consider the function and design of a skateboard, while designing their own, using simple art supplies or a computer design program.

Learning Objectives:

- students explore how making different rectangular shapes with the same perimeter affects the areas of the shapes.

Procedures:

(Skate Borders Activity Sheet)

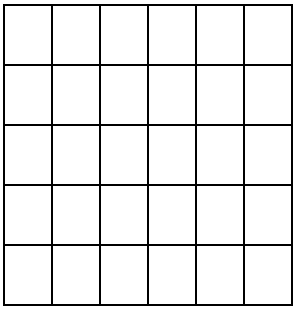
Name:_____ Date:_____

Skate Borders

Jackie and Inez are setting up a skateboarding park to practise with Matt. They have 12 fence pieces to use as borders for the park. What rectangular shape will give the kids the most area to practise their totally rad moves? Help them figure it out.

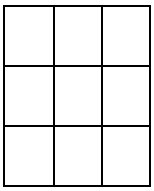
Directions: Using all 12 fence pieces as the field's border, try out different rectangular shapes until you find the one with the most number of squares inside.

Bonus: Find the rectangular shape that would give the kids the least amount of practice space.

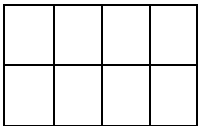


Distribute the "Skate Borders" activity sheet (see above or website below) and 12 flat toothpicks or twist ties cut to 1-inch lengths. Students may work individually or in pairs. Allow them time to complete their activity sheet. You may want to give students extra worksheets so they can keep track of the shapes they find. Then ask them which rectangle has the most squares inside. (A 3" x 3" rectangle with 9 squares.) **Bonus:** Have students find which rectangle has the fewest squares inside. (A 1" x 5" rectangle with 5 squares.)

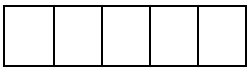
Tip: With 12 fence pieces, you can create three different rectangles with three different areas:



9 squares



8 squares



5 squares

Evaluation:

Credit:

- http://pbskids.org/cyberchase/parentsteachers/lessonplans/lesson8.html

Extended Activity:

1. Cyberchase Episode: "Totally Rad"
   Hacker takes over the Radopolis cybersite, declaring himself King. In an effort to dethrone him, the kids challenge Hacker's extreme team to a winner-take-all skate-off. There's just one catch: High-scoring tricks need as much area as possible and the configuration of the field's perimeter mysteriously keeps changing! With Digit as coach, the kids put on a dazzling display of skateboarding skills, but can they match their performance to the changing arena?
   The Big Idea: Different shapes bounded by the same perimeter can enclose very different areas.
2. Cyberchase for real (Epilogue): "The Dumas diamond": Hoping for a big reward, Harry joins the hunt for the missing Dumas diamond. Everyone participating receives the same length of tape to outline the area where they are searching. Harry becomes perturbed when he notices that someone else has marked off a bigger area to search. He does find the diamond, but the reward does quite not meet his expectations.
3. For an added challenge, vary the number of toothpicks students may use for the borders.